

Abstract of the Disclosure

A method of forming a silicon-germanium layer on an insulator includes depositing a layer of silicon-germanium on a silicon substrate to form a silicon/silicon-germanium portion; implanting hydrogen ions into the silicon substrate between about 500Å to 1µm below a silicon-germanium/silicon interface; bonding the silicon/silicon-germanium portion to an insulator substrate to form a couplet; thermally annealing the couplet in a first thermal annealing step to split the couplet; patterning and etching the silicon-germanium-on-insulator portion to remove portions of the silicon and SiGe layers; etching the silicon-germanium-on-insulator portion to remove the remaining silicon layer; thermally annealing the silicon-germanium-on-insulator portion in a second annealing step to relaxed the SiGe layer; and depositing a layer of strained silicon about the SiGe layer.